REMARKS

In the present Amendment, claim 1 has been amended to incorporate therein the subject matter of claim 2. Claim 2 has been cancelled. No new matter has been added. Entry of the Amendment at this stage of prosecution is respectfully requested as placing the application in condition for allowance.

Upon entry of the Amendment, claims 1 and 3-19 will be pending, of which claims 12-18 are withdrawn from consideration as being directed to a non-elected invention. If claim 1 is found to be allowable, Applicants respectfully request rejoinder of withdrawn claims 12-18 pursuant to MPEP §821.04(a), which claims primarily or secondarily depend from claim 1.[1].

Claims 1-11 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,877,264 to Logothetis et al in view of U.S. 2002/0040090 to Kurasawa et al.

Applicants submit that this rejection should be withdrawn because Logothetis et al and Kurasawa et al do not disclose or render obvious the present invention, either alone or in combination.

The fluororesin composition of amended claim 1 comprises a fluorine-containing ethylenic polymer and a carbon fibril. The fluorine-containing ethylenic polymer is a carbonyl group-containing polymer and the number of carbonyl groups is 3 to 3,000 per 1×10^6 main chain carbon atoms.

[1] As provided by MPEP §821.04(a), where restriction was required between independent or distinct products,..., and all claims directed to an elected invention are allowable, any restriction requirement between the elected invention and any non-elected invention that depends from or otherwise requires all the limitations of an allowable claim should be withdrawn.

If the number of carbonyl groups is less than 3 per 1 x 10^6 main chain carbon atoms, the affinity for the carbon fibrils will be poor and the mechanical characteristics of the moldings obtained will be poor in some instances. When it exceeds 3,000 per 10^6 main chain carbon atoms, foaming, for instance, may readily occur and the possibility of pinhole formation or cracking may arise (page 6, line 33 to page 7, line 4 of the specification).

When the number of carbonyl groups per 10^6 main chain carbon atoms is within the recited range, the fluorine-containing moldings thereby obtained hardly allow carbon fibrils to fall off and exhibit a low level of carbon fibril transfer to paper (page 7, lines 10-14 of the specification).

Logothetis et al and Kurasawa et al do not disclose or suggest the number of carbonyl groups per 10^6 main chain carbon atoms recited in the present claims and the effects thereof.

Further, as explained in the previous Amendment filed March 27, 2008, the presently claimed fluororesin has a high conductivity.

The Examiner considered that any comparison with polymers not having carbonyl groups is moot, and that polymers having polar groups are inherently more conductive than similar polymers that do not have polar groups.

Applicants respectfully disagree.

The present claimed polymer has a much higher conductivity than fluoro-polymers containing carbonyl groups.

The fluorine-containing ethylenic polymers F-A and F-B, which were employed in the Examples and Comparative Examples of the present specification, have a surface resistivity of 10^{17} Ω/□ (Applicants' data). In contrast, the Examples of the present specification have a surface resistivity of not more than 0.8 x 10^6 Ω/□ (Table 2 at page 32 of the specification).

The Examiner also considered that one of ordinary skill would have been motivated to use carbon fibrils where Logothetis calls for carbon black.

However, neither Logothetis et al nor Kurasawa et al teaches or suggests that a polymer containing the specific amount of carbonyl groups can fix the carbon fibrils to thereby provide enhanced conductivity.

Logothetis et al discloses that the rapid cure rate which characterizes the curable nitrile containing perfluoroelastomer compositions of their invention is dependent on the carbonyl content of the polymer component (col. 6, lines 35-38). However, there is no description of the relation between carbonyl groups and carbon fibrils.

Kurasawa et al does not teach or suggest a carbonyl group-containing polymer.

Indeed, the combination of the carbonyl group-containing polymer and carbon black does not provide such effect of enhanced conductivity.

Comparative Examples 1 to 5 employed carbonyl group-containing polymer and carbon black and showed inferior conductivities. Particularly, Example 1 (having a mass ratio of polymer F-A : *carbon fibrils* of 98:2) is directly comparable to Comparatively Example 1 (having a mass ratio of polymer F-A : *carbon black* of 98:2). Example 1 has a surface resistivity of 0.8×10^6 Ω/□, while Comparative Example 1 has a surface resistivity of 10^{11}-10^{10} Ω/□ (Table 2 at page 32 of the specification).

Carbon black is not fixed well in the carbonyl group-containing polymer. The low level of carbon fibril transfer to paper reveals such fact. In Examples 1 and 2, no traces of filler transfer were observed. In Comparative Examples 1 to 3, filler-derived black lines were observed (Table 2 at page 32 of the specification).

The results of paper passage tests also show such fact. As shown in Table 4, an increase in surface resistivity was observed after the paper passage test in Comparative Example 8 in which the fluorine-containing polymer F-G, which is a carbonyl group-free one, was used. Surface observation confirmed the existence of traces suggesting that carbon fibrils in the vicinity of the surface had fallen off.

The possible mechanism is described at page 18, line 9 to page 19, line 21 of the specification.

> Thus, since the fluorine-containing ethylenic polymer has carbonyl groups, the ability thereof to contact with the carbon fibrils is high and, when the polymer molecule chains of the fluorine-containing ethylenic polymer are oriented in the step of molding, the carbon fibrils are also oriented with ease in accordance with the orientation of those polymer molecule chains. Owing to the above-mentioned mechanism of orientation of the carbon fibrils, the conductivity can presumably be increased even when addition level of the carbon fibrils or the conductive filler other than the carbon fibrils, which is used if desired, is low.
> The fluororesin composition of the invention can facilitate the carbon fibrils to be straightened to a long and slender state owing to the above-mentioned mechanism of orientation of the carbon fibrils so that the carbon fibrils can be satisfactorily entangled with the molecular chains of the fluorine-containing ethylenic polymers. As a result, the moldings obtained hardly allow the carbon fibrils to fall off from the moldings and, even in the field of applications where mechanical friction due to sliding, for instance, is inevitable, the fall off of the carbon fibrils in the course of use of the moldings is slight.

The effect of the present invention is obtained by such working mechanism. One having ordinary skill in the art cannot expect the effect provided by the present invention even if the properties of fibrils are well established.

Logothetis et al does not teach or suggest the claimed fluorine- and carbonyl group-containing ethylenic polymer. The curing for a fluoroelastomer is not needed in a fluororesin.

Therefore, neither Logothetis et al nor Kurasawa et al teaches or suggests that a carbonyl group-containing polymer can fix the carbon fibrils and the high conductivity provided by the present invention is unexpected.

In view of the above, reconsideration and withdrawal of the §103(a) rejection based on Logothetis et al in view of Kurasawa et al are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Hui Chen Wauters

Hui C. Wauters
Registration No. 57,426

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860
WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: October 14, 2008